

REMARKS

Applicant has received and reviewed the Final Office Action mailed by the Office on January 25, 2007 (hereinafter, "Final Action"), and submits this response to the Final Action with a request for continued examination (RCE).

Claims 1-38 remain pending in the present application. Applicant amends Claims 1, 8, 17, and 27 to clarify claimed subject matter and/or correct informalities. The original specification and drawings support these claim amendments at least at pages 8, 10-12, 16-18, 20, and in Figures 4 and 7. Therefore, these revisions introduce no new matter.

Claims 1-38 are for consideration upon entry of the present Amendment. Applicant requests favorable consideration of this response and allowance of the subject application based on the following remarks.

Claim Rejections under 35 U.S.C. §112, 2nd para.

Claims 1-16 and 27-31 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant amends independent **Claims 1, 8, and 27** to clarify the subject matter and support may be found at least at pages 10-12, 16-18, and in Figures 4 and 7. Thus, no new matter has been introduced. Dependent Claims 2-7, 9-16, and 28-31 depend from one of independent Claims 1, 8, and 27, respectively, and are allowable as depending from an allowable base claim. Applicant respectfully submits that these claims now comply with 35 U.S.C. §112, second paragraph, and as a result the rejections are now moot. Applicant respectfully requests withdrawal of the §112 rejections.

Claim Rejections 35 U.S.C. §102

Claims 17-20, 22-24, 26, 32-33, and 37 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,668,987 to Schneider. Applicant respectfully traverses this rejection. Anticipation under §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (MPEP §2131).

Without conceding the propriety of the stated rejections, and only to advance the prosecution of this application, Applicant amends **independent Claim 17**, to clarify further features of the subject matter. **Independent Claim 17** recites one or more computer-readable storage media storing computer-executable instructions that, when executed on a computer, perform the following steps:

- receiving a request to add a new query to an inverse query engine cache that stores multiple queries, each query having a query size associated therewith;

- defining conditions and processing input that satisfies the conditions;**

- deriving a cache size that is a sum of query sizes of the queries stored in the inverse query engine;

- determining if the cache size is at greater than or equal to a maximum cache size, **wherein the cache size may be determined comprising cache usage, size of the query, or estimate of size of the query;**

- removing one or more queries from the inverse query engine cache if the cache size is greater than or equal to the maximum cache size;

- deducting the query size of each query removed from the cache size;**

- adding the new query to the inverse query engine cache; and**

- adding a new query size to the cache size, the new query size identifying a size of the new query added to the inverse query engine cache.**

Applicant respectfully submits that no such computer readable storage media is disclosed or suggested in Schneider.

Schneider Does Not Disclose Conditions Defined, Deducting the Query Size, and Adding New Query Size

First, Schneider is directed towards maintenance of indexes to information stored in a data processing system (col. 1, lines 16-17). Schneider stores, retrieves, and presents particular data records (col. 4, lines 54-55), not “defining conditions and processing input that satisfies the conditions”, as recited in Applicant’s Claim 17. Rather, Schneider counts up the number of misses (col. 8, line 15) and if there have been absolutely no cache “hits” (col. 8, lines 42-43). The cache size in Schneider is determined by the number of rows (col. 2, lines 25-26). Nowhere in Schneider is there any discussion or mention of “defining conditions and process input that satisfies the conditions, and the cache size may be determined comprising cache usage, size of the query, or estimate of size of the query”, as recited in Applicant’s Claim 17.

Second, the Office implies “deducting the query size of each query removed from the cache size” is disclosed by Schneider. The Office fails to provide any citations in Schneider to illustrate the recited features. Schneider initially assumes a large cache is optimal, such as 2k of memory or larger (col. 7, lines 48-50). If it turns out that a large cache size is best, the system has at the outset already achieved optimal cache size (col. 8, lines 3-5). Therefore, there is no need of deducting the query size of each query removed from the cache size by Schneider.

Third, the Office states “adding a new query size to the cache size, the new query size identifying a size of the new query added to the inverse query engine cache” is disclosed by Schneider. Again, the Office failed to provide any citations in Schneider to show the recited features. In Schneider, if the number of “hits” is equal to zero, the cache size is reduced to one row for the rest of the execution (col. 8, lines 42-45). The system sets flags to “don’t grow” and “don’t adjust” the cache size (col. 8, lines 55-56). Thus, there is no need to add a new query size in Schneider.

This evidence or lack of evidence does not disclose the features, as recited in Applicant’s Claim 17. Without any discussion or mention of the recited features, Applicant respectfully submits that Applicant’s Claim 17 is not anticipated by Schneider.

Dependent Claims 18-20, 22-24, and 26 depend directly or indirectly from independent Claim 17 and are allowable by virtue of this dependency, as well as for the additional features that they recite. Consequently, Applicant respectfully submits that these claims are not anticipated by Schneider and requests that the §102 rejection be withdrawn.

Schneider Does Not Disclose Inverse Query Engine Having Integrated Cache

Turning next to **independent Claim 32**, which recites “an inverse query engine having an integrated cache”. First, the Office implies an engine 260 in Schneider is an inverse query engine. However, the sections cited by the Office shows the engine 260 of Schneider is in the Database Server System 240 (Fig. 2, col. 5, lines 2-3). Applicant defines an inverse query engine receives an input (i.e. a message) and tests that input against each of the filters (i.e. queries) in the filter table (Specification, pg. 2). The

inverse query engine is the logic that uses the filter table to drive the comparison process (Specification, pg. 2). Schneider's engine is in the Database Server System, which is not an inverse query engine, as recited in Applicant's Claim 32. Thus, Schneider does not disclose this feature.

In addition, the Office implies a subquery cache (Fig. 3B, 340) is an integrated cache. Schneider describes a subquery cache is a local cache or memory buffer which operates to save values (col. 6, lines 31-33), which is not an integrated cache, as recited in Applicant's Claim 32. Applicant describes an inverse query engine system that has a dedicated cache and utilizes methods to maintain the cache (Specification, pg. 4). The dedicated, or integrated, cache stores a filter table and provides greater stability for the inverse query engine (Specification, pg. 4). Applicant asserts Schneider fails to anticipate independent Claim 32 because Schneider fails to disclose the recited features of the claimed subject matter.

Dependent Claims 33 and 37 depend directly from independent Claim 32, and are allowable by virtue of this dependency. These claims are also allowable for their own recited features that, in combination with those recited in Claim 32, are not disclosed by Schneider. Accordingly, Applicant requests that the §102 rejections be withdrawn.

Claim Rejections under 35 U.S.C. § 103: A, B, and C

A. Claims 1-12, 14-15, 21, 27-31, and 34-36 stand rejected under 35 U.S.C. §103(a) as being obvious over Schneider in view of U.S. Patent Application No. 5,668,987 to Klein et al. (hereinafter "Klein").

B. Claims 6, 9-10, 13, 16, 21, 25, 28-30, 34-36, and 38 stand rejected under 35 U.S.C. §103(a) as being obvious over Schneider in view of U.S. Patent Application Publication No. 2003/0165160 to Minami et al. (hereinafter “Minami”).

C. Claim 16 stand rejected under 35 U.S.C. §103(a) as being obvious over Schneider in view of U.S. Patent Application No. 4,928,239 to Baum et al. (hereinafter “Baum”). Applicant respectfully traverses these rejections.

Without conceding the propriety of the stated rejections, and only to advance the prosecution of this application, Applicant amends **independent Claim 1**, to clarify further features of the subject matter. **Independent Claim 1** recites a method, comprising:

- receiving a request to add a new filter to a filter table stored in an inverse query engine cache;

- adding the new filter to the filter table, wherein the new filter comprises a condition field, a data field, an expiration time field, a filter weight field, and a permanent flag field;**

- determining the filter table of a bounded size;

- maintaining the inverse query engine cache at or below a maximum cache size, **wherein the size of the inverse query engine cache may be indicated by size of the filter table, estimate of size of the filter table, or by cache usage;**

- wherein the inverse query engine cache comprises at least one of an add filter module, a remove filter module, a matcher, a maintainer, a filter table, a most recently used list, or an expiration list;

- wherein the expiration list comprises a filter identifier including an expiration value in an expiration field;**

- removing a filter based on an expiration time;**

- trimming the filter table; and

- wherein the inverse query engine cache is used exclusively by an inverse query engine to store filters associated therewith.

References Fail to Teach or Suggest Adding the New Filter and Removing a Filter

First, Applicant asserts the Office has failed to establish a *prima facie* case of obviousness. The Office cites Schneider, “after the cache is scanned and a “miss” occurs,

the subquery is executed and its input value(s)/result value pair is added to the top of the subquery cache” (Office Action, pg. 12), which is not “adding the new filter to the filter table, wherein the new filter comprises a condition field, a data field, an expiration time field, a filter weight field, and a permanent flag field”, as recited in Applicant’s Claim 1. Applicant describes a filter includes several fields that include filter information utilized by the inverse query engine (Specification, pg. 11). Therefore, the features in Schneider and Applicant’s Claim 1 are not performing similar functions. Thus, Schneider fails to teach or suggest “adding the new filter to the filter table...flag field”, as recited in Applicant’s Claim 1.

Second, the Office states that Schneider does not teach removing a filter based on an expiration item (Office Action, page 13). Applicant agrees. However, Klein fails to compensate for the deficiencies of Schneider, as neither reference teaches or suggests “the expiration list comprises a filter identifier including an expiration value in an expiration field; and removing a filter based on an expiration time”, as recited in Applicant’s Claim 1.

Klein is directed to viewing temporal row data in a consistent read-implement database (Abstract). In Klein, the expiration time is used by a database storage manager to indicate a time after which the extent can be overwritten with new data (col. 7, lines 13-15). Each extent is a block of contiguous memory locations which have an associated expiration time (col. 7, lines 11-12). In contrast, Klein defines expiration time for contiguous memory locations, while Applicant’s Claim 1 recites “the expiration list comprise a filter identifier including an expiration value in an expiration field; and

removing a filter based on an expiration time”. Thus, Klein does not provide what is missing from Schneider to support a §103 rejection.

Schneider and Klein, alone or in combination, do not teach or suggest “adding the new filter...field; expiration list comprises a filter identifier including an expiration value in an expiration field; removing a filter based on an expiration time”, as recited in Applicant’s Claim 1. Accordingly, Applicant submits that the evidence relied upon by the Office does not support the rejections made under §103.

There is No Suggestion or Motivation to Combine the Teachings

Next, to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings (MPEP §2142). The Office stated the motivation for combining the methods of Schneider and Klein is “to further enhance the cache replacement strategy beyond the commonly adopted “Least Recently Used” scheme, and makes better utilization of the precious resource of cache capacity”.

However, there is nothing in either of the references that would suggest this motivation. Schneider mentions the LRU as an approach that will not achieve good results for all classes of queries (col. 7, lines 33-35). In Schneider, the size of the cache can be dynamically adjusted by the system during execution of the query, for achieving an optimal cache size (col. 7, lines 43-44). Thus, there is no need to combine the two references. The asserted motivation relies on hindsight without evidence of teaching or

suggestion to propose the suggested combination. Thus, this rejection is improper for this additional reason.

Independent Claims 8 and 27 are directed to a system and a method, respectively, and each is allowable for reasons similar to those discussed above with respect to Claim 1. For example, Schneider and Klein fail to teach or suggest “maintainer removes a filter based on an expiration time from the cache and trims the cache; wherein the size of the filter table may be indicated by size of the filter or by weight of the filter”, as recited in Applicant’s Claim 8. Furthermore, Schneider and Klein fail to teach or suggest “defining conditions and processing input that satisfies the conditions; the cache size may be determined comprising cache usage, size of the query, or estimate of the query”, as recited in Applicant’s Claim 17.

Dependent Claims 2-7, 9-16, and 28-31, depend directly or indirectly from one of independent Claims 1, 8, and 27, respectively, and are allowable by virtue of this dependency. These claims are also allowable for their own recited features that, in combination with those recited in Claims 1, 8, and 27 are not taught, or suggested by Schneider and Klein.

All of the §103(a) rejection relies on Schneider. As explained above with respect to the rejection under 35 U.S.C. §102(b), Applicant submits that Schneider does not disclose the features recited in **independent Claims 17 and 32**. In particular, Schneider fails to disclose “defining conditions...conditions, deducting the query size...size, cache size may be determined comprising cache usage, size of the query, or estimate of the query; adding a new query size...cache, and an inverse engine having an integrated cache.

Dependent Claims 21, 25, 34-36, and 38 depend directly or indirectly from one of independent Claims 17 and 32, respectively, and are allowable by virtue of this dependency. These claims are also allowable for their own recited features that, in combination with those recited in Claims 17 and 32, are not taught, or suggested by Schneider and Klein.

Applicant respectfully submits that the cited references do not render the claimed subject matter obvious and that the claimed subject matter, therefore, patentably distinguishes over the cited references. For all of these reasons, the §103 rejection of these claims is improper and should be withdrawn.

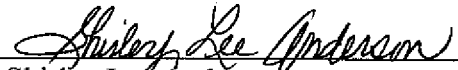
Conclusion

Claims 1-38 are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of the subject application. If any issue remains unresolved that would prevent allowance of this case, the Office is requested to contact the undersigned attorney to resolve the issue.

Respectfully Submitted,

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